CEOS WGISS Integrated Catalog: A Catalog for Earth Observation Satellite Data

Ken McDonald <kenneth.mcdonald@noaa.gov>
Yonsook Enloe <yonsook.k.enloe@nasa.gov>
Martin Yapur <martin.yapur@noaa.gov>

Presentation Topics

- GEO & CEOS Background
- Why CWIC?
- CWIC Implementation
- CWIC Partners, Data, Basics, Info page, etc.

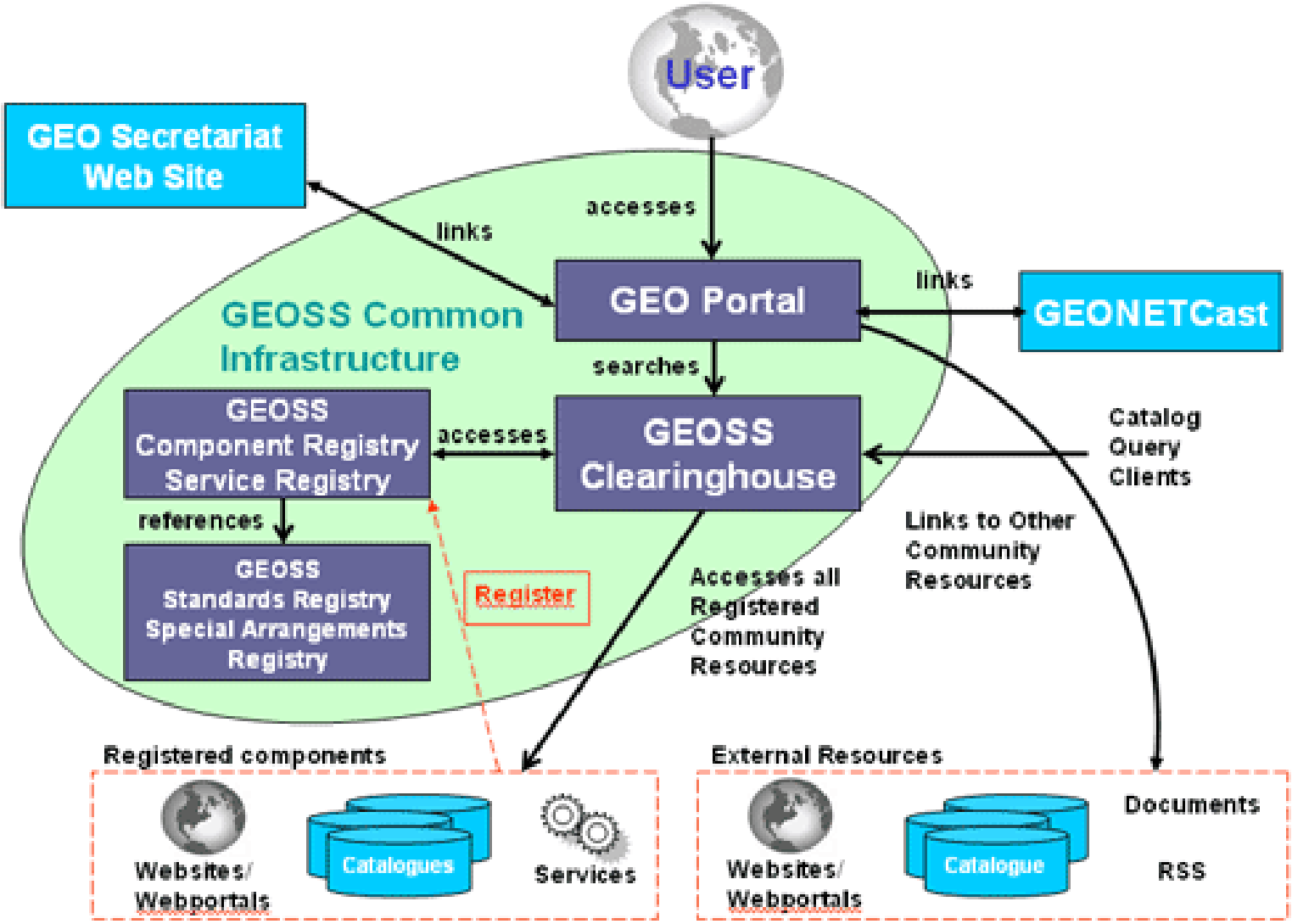
Group on Earth Observations (GEO)

- EO Summit: Ministers of countries; established GEO as an organization, endorsed GEOSS 10 year plan
- GEO Plenary: Members (national bodies and the EC) and Participating Organizations
- GEO Secretariat: Director and staff
- GEO Committees: Capacity Building (CBC), Architecture and Data (ADC), Science and Technology (STC), User Interface (UIC), and the C4
- GEO Work Plan and Tasks

http://earthobservations.org

GEO GROUP ON EARTH OBSERVATIONS

GEOSS Common Infrastructure



CEOS - Background

- Committee on Earth Observation Satellites (CEOS) established in 1984
- Recommendation From a Panel of Experts on R/S
  - Auspices of Economic Summit of Industrialized Nations
    - Working Group on Growth, Technology, & Employment
  - Need to Coordinate Civil EO Satellite Missions
    - Recognized Cross-Disciplinary Influence
- CEOS Objectives
  - Optimize the benefits of spaceborne Earth observations through cooperation…
  - To serve as a focal point for international coordination…

    …of space-related Earth observation activities;
  - To exchange policy and technical information
- CEOS Working Groups
  - Focused activities to achieve CEOS objectives
  - Working Group on Information Systems and Services (WGISS)

Working Group on Information Systems and Services (WGISS) Objective Statement

Promote collaboration in development of systems and services…

…based on international standards…

…that manage and supply Earth observation data and information…

…from participating agencies' missions.

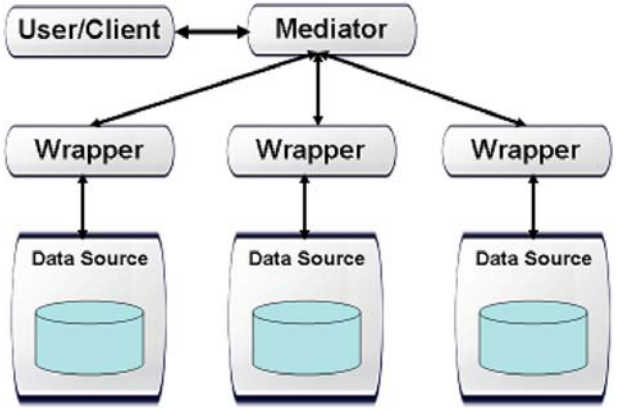
http://wgiss.ceos.org

Why CWIC?

- WGISS agencies have a vast quantity of data, systems, and other resources that can support science or applications
- WGISS has a history of working to make these resources accessible through a common set of discovery, search, access, and service interfaces.
- WGISS is working with GEO and GEOSS to ensure that the WGISS data and tools can interoperate with the different national and international spatial data infrastructures.
- The CEOS WGISS Integrated Catalog is a WGISS project that provides a common access point to search, discover, and access data at the CEOS agencies.
- CWIC project also allows CEOS members to work together to address GEO goal of “harmonization”.

CWIC Approach

- CWIC uses a mediator-wrapper architecture to access the heterogeneous systems of the CEOS agencies
- It uses the GEO catalog standard (OGC CSW 2.0.2) to interface with the clients
- Search responses returned using ISO 19115 metadata
- Approach addresses the WGISS directory/inventory (collection/granule) metadata model



Directory/Inventory Search

- Directory/collection search: Supported by the IDN (international version of the GCMD).
- Each CWIC collection has a unique DIF with a unique DIF Entry ID.
- User can select science keywords, platform and instrument keywords as well as a spatial area and time range to narrow down to a smaller list of collections of interest.
- Inventory/granule search: Supported by CWIC. Each CWIC search will identify a collection (name or DIF Entry ID) and data center name along with the search criteria.
- CWIC uses the services provided by the IDN and agency inventory systems – it does not replicate those services or the metadata they contain.

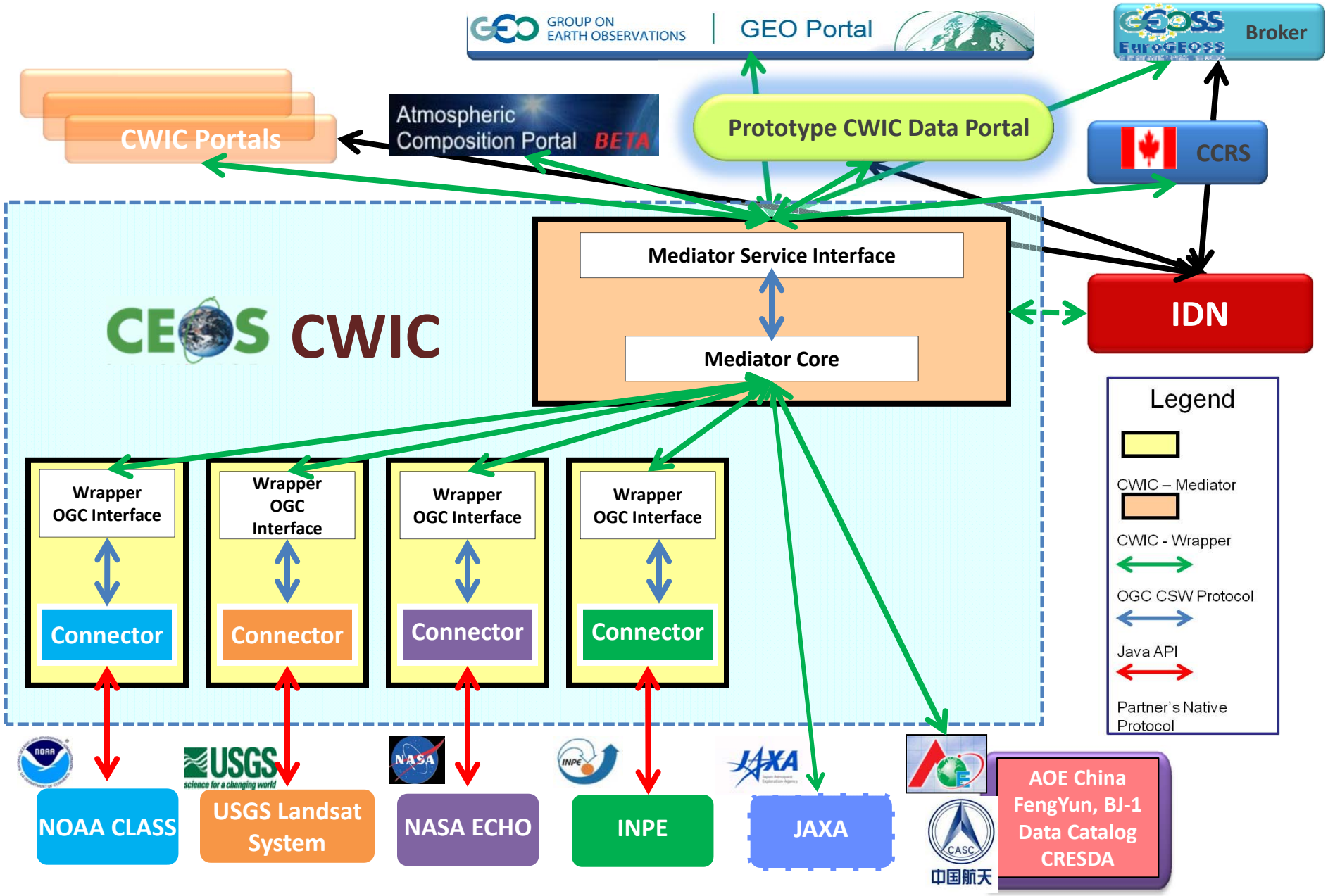
CWIC Details

- CWIC provides translation from GEO supported CSW (ISO) to the agency inventory system protocol – friendly approach to trying out a new standard!
- CWIC clients expected to support directory/collection search at the Global Change Master Directory (GCMD) CSW Port.
- Alternatively, a CWIC Capabilities Request returns the list of all searchable collections.
- Each CWIC searchable collection must have a unique DIF in the GCMD -> DIF Entry ID uniquely identifies the inventory collection.
- Currently, both the data center and the data collection name must be specified in the inventory search

CWIC Metadata

- CWIC team has developed a WGISS search criteria based on ISO 19115 and this is expected to be implemented in the near future. Currently the inventory search includes dataset name, data center, spatial, and temporal values.
- CWIC Data Providers map their metadata to ISO 19115 for a limited number of elements in the returned search results (e.g. for online data access, browse, etc.).
- This set of returned elements in ISO format is expected to grow.
- CWIC data providers will return the full inventory metadata in native format.
- Results of efforts available at CWIC Project website

CEOS WGISS Integrated Catalog – CWIC



CWIC Clients

- GMU GeoBrain (USA) (test client - operational)
  - GeOnAS
  - GeoDataDownload
- LSI Portal (USA) (testing)
- NASA Reverb (USA) (testing) – science users
- ESSL-Lab (Italy) (developing)
  - GI-go GeoBrowser
- EuroGEOSS Broker (developing)
- Natural Resources Canada (Canada) (near operational)
  - CCRS, Canada Centre For Remote Sensing

Potential CWIC Clients

- NRSCC (China)
  - National Remote Sensing Center of China
  - Both CWIC data provider and CWIC client

- JeoBrowser (CNES) (France)
  - Centre National d'Etudes Spaciales

- GENESI (ESA)
  - Ground European Network for Earth Science Interoperations - Digital Repositories

- Heterogeneous Missions Accessibility (ESA)

CWIC Working with CEOS Partners

- ✓ NOAA USA
- ✓ NASA USA
- ✓ USGS USA
- ✓ INPE Brasil
- ✓ CCRS Canada (client)
- ➢ AOE China (3 centers)
- ➢ JAXA Japan (in progress)
- ➢ GHRSST (in progress)
- • NRSCC China
- • ESA
- • ISRO India
- • NSAU Ukraine

What Data?

- NOAA: limited data available through the NEATT API to CLASS; New CLASS API will debut in summer 2013 and provide access to a broad range of data in CLASS
  - GHRSST (NODC is the archive) – working to make data accessible via CWIC
- NASA: 2757 publicly accessible data collections in ECHO -> goal to provide to CWIC (< 105 million granules)
  - NASA LANCE near real time data (< 2.5 hrs of acquisition; AIRS (Aqua) and MLS (Aura), MODIS (Aqua & Terra), OMI (Aura) and AMSR-E(Aqua) will be made accessible to CWIC in the next year.
- INPE: CBERS and adding additional datasets
- USGS : Landsat TM & MSS
- China: AOE is working with 3 data centers and will make data available
- JAXA: will make over 16 million granules from GOSAT, ALOS, Aqua, TRMM, JERS1, ADEOS2 and ADEOS accessible to CWIC.
- CCRS: will start work to make their publicly accessible satellite data accessible via CWIC

CWIC Status

- CWIC Implementation in 3rd year of 3 year funding from NOAA and additional funding from NASA.
- Coordinating directory search via the International Directory Network (IDN) and the GCI
- Adding a more extensive inventory search criteria to allow detailed keyword searches
- How-To Guides for CWIC partners posted and available
- Exceptions handling document produced and under review
- Beginning to address user registration/authentication across CWIC community
- Started moving from prototype to pre-operational

http://wgiss.ceos.org/cwic

CWIC Project

Details

Last Updated on Tues

Welcome to the WGISS Archite

Project lead name and contac

- Martin Yapur (NOAA)
- Yonsook Enloe (NASA)

CEOS WGISS Integrated Catalog (CWIC)

See how the Directory Information in the IDN is used with data of interest:

CWIC Data Portal Demonstration (YouTube video)

How-To Guides for CWIC Partners

CWIC DIF Guide - How to register data collections in the

CWIC Client Guide - How to connect your Portal to CWIC

CWIC Data Partner Guide - How to offer your agency sate

CWIC Technical Documents

Initial Design

WGISS Search Criteria

Details of satellite data metadata at CWIC Data Partners

Mapping Dataset IDs to IDN/GCMD DIF Entry IDs

Global Change Master Directory (GCMD)/International Directory Network (IDN) DIFs for CEOS WGISS Integrated Catalog (CWIC) Data Provider Products

1. Introduction

The Directory Interchange Format (DIF) is a metadata
describe scientific data sets. Because of the widespre
also has come to mean discovery level metadata. A DI
information about the data set. Seventeen are free-tex
keywords. These keywords are maintained within the
fields and keywords takes place. These controlled key
normalized searches for users. The DIF offers the esse
required in the ISO 19115 metadata standard, along wi
options. Using the DIF metadata creation tool (docBuil
using the DIF format. Each DIF entry can be extracted
19115. For CWIC data partners, a DIF for each datas
portals can search the IDN for high level dataset inform
format.

IDN Home Page: http://idn.ceos.org/

Add Data Set Descriptions to the GCMD/IDN: http://

CEOS CWIC Project

CWIC Client Partner's Guide

Mar. 2012

Document version 20120326

CEOS CWIC Project

CWIC Data Partner's Guide

Feb. 2012

Document version 1.1

GEOSS Infrastructure Enhancements

GEOSS Common Infrastructure

- GEOSS Registration Service (CSR)
- Standards and Interoperability Registry
- *EO Vocabulary**
- Clearinghouse
- Best Practices Wiki
- *Brokered Search: EuroGEOSS*, GENESI*, CWIC**

EO Data: including Data-CORE pledges

Services: Catalog, Access, Processing e.g. IDN, CSW, WCS, WMS, ftp, OpenDAP

Inventories: e.g. Landsat, FedEO, CBERS, NASA ECHO, NOAA CLASS

Applications: Web and PC

** Prototype capabilities*